

Improving the Health and Safety of a  
Rural Community with a Scenic Byway

by

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## **Abstract**

Special Note: This paper has been prepared to provide perspective for the Town of Moretown and the Vermont Mad River Byway Committee in addressing growth and tourism opportunities, health and recreation needs and infrastructure changes resulting from Federal Scenic Byway designation of the Route 100-B highway which bisects the Town of Moretown, Vermont.

The National Scenic Byways program was designed to preserve unique archeological, cultural, historic, scenic, natural and recreational resources within a community. Preserving these resources often creates secondary tourism and economic benefits as well. Absent from the original Scenic Byway design concept is consideration for the public health impact that Byway designation and resultant changes to the built environment may have on a community. Communities benefit in quantifiable ways when they manage increased noise and air pollution and traffic safety issues resulting from increased vehicular traffic spurred by increased tourism. . When a community understands the potential of these impacts, it can leverage the Scenic Byway Designation to design and build infrastructure improvements that promote both economic development and a healthier community.

## **Introduction**

Scenic Byway designation can dramatically impact small towns. Research demonstrates that Scenic Byways increase tourism and stimulate economic development (Scenic America, 2007).<sup>1</sup> The National Scenic Byways program was established to help “recognize, preserve and enhance roads throughout the United States” through four primary approaches:

1. Promotion Through Increased Tourist Visits:

Roads with byway designation are afforded built-in promotional opportunities through the Federal Highway Administration’s National Scenic Byways Program which are designed to increase recognition and improve tourism. Opportunities include a national registry of byway locations and national tourism promotions.

2. Preservation of Historic and Natural Resources:

The intrinsic qualities of a byway--historic buildings, scenic vistas, outdoor recreation opportunities--are essential to byway sustainability.

3. Partnerships forged among stakeholders:

Communities create a shared byway vision, and offer resources and commitment. Partnerships emerge at the local level and can also be made nationally through this national designation program.

4. Pride through conservation, improvement and development efforts:

Byways connect communities together, provide opportunities for working together toward common goals, and increase interest in community matters.

(National Scenic Byways Program, 2007).<sup>2</sup> .

The potential benefits of Byway Designation are numerous and readily understood by forward-thinking communities such as Moretown, Vermont. Moretown's Nomination Package & Corridor Management Plan (Landworks)<sup>3</sup> addresses a number of enhancement strategies related to byway designation including transportation, recreations, historic preservation, natural resources and village enhancements. The byway vision, as described in this plan, is:

*to provide a unique, enticing, and gratifying experience to residents and visitors that live, work and play along the Route 100B corridor by providing opportunities for Village enhancement projects, economic development, preservation of important historical and natural resources, and improved access to recreational lands and facilities, all while maintaining the region's quality of life, safety, and respect for local residents.*

Given the promise of this vision, Moretown is well positioned to explore and address health and safety considerations in these early stages of planning and infrastructure development which will enhance their Byway program plan in measurable ways. Without consideration of the public health impacts, however, improvement plans will fall short. For example, road improvements may increase vehicular traffic through our small town. While potentially benefiting the town economically, it could also have a detrimental effect on health and safety of pedestrians, cyclists and townspeople living on the road. Increased vehicular traffic also creates the potential for increased noise levels and air pollution. These and other public health issues negate economic and other gains if not carefully managed. As the town of Moretown, Vermont has received federal scenic byway designation for its through-road, Route 100B, and works to engage the community in appropriate development projects, these considerations need to be taken into account. Byway development in Moretown can be accomplished in ways that result in a healthier, safer community that is more physically active and socially connected and that fosters

positive economic development in the process. This paper highlights a number of health and safety concerns and recommends specific action steps to be considered by town and regional planning officials.

### **How the Built Environment Impacts Health and Safety**

Rural areas consist of towns that have populations of less than 2,500 people, have generally un-developed land, and where people may live on farms (U. S. Census Bureau, 1990).<sup>4</sup> The 2006 population estimate for Moretown was 1,727 (City-Data.com 2003-2007)<sup>5</sup>. Moretown's land area is approximately 40 square miles and the population density is 43 people per square mile (City-Data.com 2003-2007).<sup>6</sup> Thus, issues concerning the built environment must be considered within the context of a rural environment.

### **Rural Characteristics and the Health of the Rural Population**

The Institute of Medicine in 2004 sponsored a roundtable discussion on health and the environment in rural America at the School of Environmental Studies of the University of Iowa. In the summary document of that roundtable discussion, the following theme emerged: "Rural environmental characteristics, such as the mechanization of farm and the features of the built environments of small towns - which typically do not include the fitness facilities or the bicycle trails that might be found in an urban landscape - combined with a motorized way of life, necessary to traverse long distances even for children to go to school, contribute to decreased levels of physical activity" (IOM workshop summary, 2006)<sup>7</sup>. This statement can be extrapolated to the town of Moretown in which only a small number of homes are within close walking proximity to the village center and where most residents are vehicle-bound to access services, even to visit friends and neighbors. Even within the village boundaries, walkable areas

and opportunities for other physical activity are restrained by a limited supportive infrastructure. Although data is not available for Moretown specifically, state level data provided by the Behavioral Risk Factor Surveillance System (BRFSS) shows that 40% of Vermonters do not engage in moderate physical activity (Table 1). This indicator has not changed significantly over the last five years. (CDC, 2005)<sup>8</sup>.

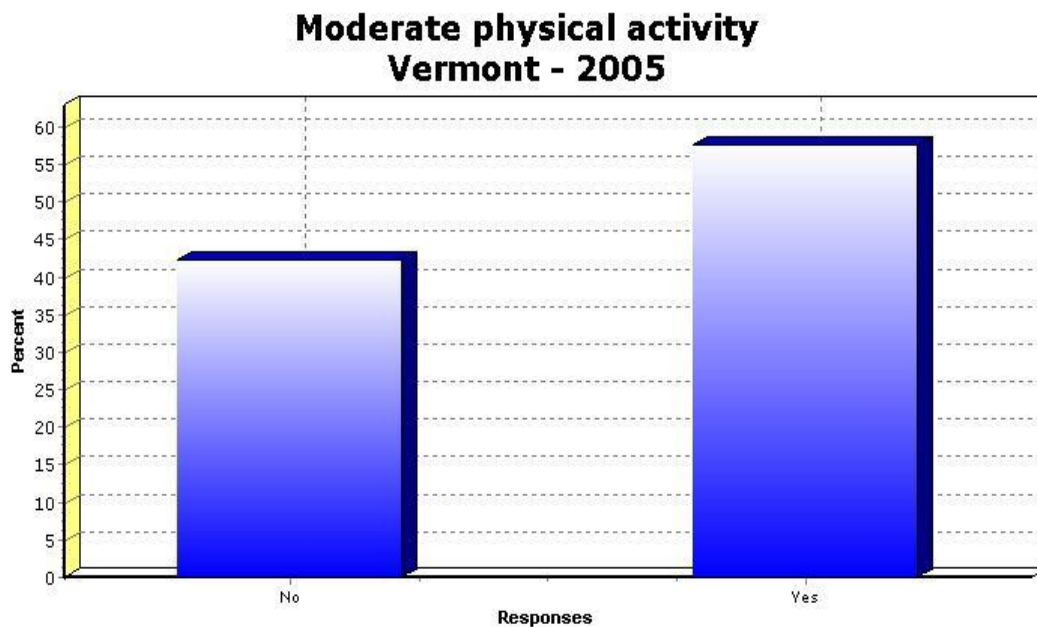


Table 1: Percent of respondents to the 2005 Vermont Behavioral Risk Factor Surveillance System who reported that they get (yes) or do not get (no) 30+ minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20+ minutes three or more days per week

While encouraging to health policy makers and physical fitness enthusiasts that nearly 60% of Vermonters report moderate to vigorous levels of physical activity, it is important to note that rather than trending further upward, physical activity levels have leveled off and stagnated in recent years. The 2001 and 2003 BRFSS show virtually the same percentages as found in 2005, illustrated by Table 1 above. Community-based efforts aimed at increasing physical activity can help counter this idling trend. Components of the Scenic Byway program supporting

infrastructure development have the potential of providing greater access to physical activity programs and of encouraging higher levels of participation in physical activity—both desired outcomes of the Healthy Vermonters 2010 goals<sup>9</sup>.

### Traffic and Pedestrian Safety Issues

64,000 pedestrians are injured in motor vehicle accidents each year in this country. In 2005 nearly 5,000 pedestrians lost their lives as a result of a vehicular crash. Pedestrians comprise about 11 percent of motor vehicle crash deaths each year (NHTSA, 2006).<sup>10</sup> While the number of pedestrian-vehicle crashes have declined over the past 30 years, three facts remain constant:

1. Young children are still most likely to be struck by motor vehicles
2. Elderly people struck by vehicles are more likely to die (IIHS, 2007)<sup>11</sup>
3. Pedestrian-vehicle crashes in rural areas are more likely to occur along major roads (IIHS, 2005).<sup>12</sup>

Tables 2, 3, and 4 show that 77% of pedestrian deaths occurred in non-intersections and more than half of all pedestrian deaths occurred on major, non-interstate roads. Additionally, 30% of pedestrian deaths occurred on roads with speed limits between 35-50 M.P.H. Route 100B through Moretown is a major, non-interstate road with a speed limit of 50 mph, except within the village center where the speed limit ranges from 35- 40 M.P.H.

Pedestrian deaths by junction type, 2005						
Junction type	<70		≥ 70		Total*	
	Num	%	Num	%	Num	%
Non-intersection	3,194	79	503	65	3,748	77
Intersection	855	21	267	35	1,133	23
Total*	4,049	100	770	100	4,881	100
*Total includes other and/or unknowns						
Table 2						

Pedestrian deaths by road type, 2005		
Road type	Num	%
Interstates and freeways	790	16
Other major roads	2,676	55
Minor roads	1,225	25
All road types*	4,881	100
*Total includes other and/or unknowns		
Table 3		

Pedestrian deaths by speed limit and land use, 2005						
Speed limit	Urban		Rural		Total*	
	Num	%	Num	%	Num	%
No limit	9	<1	6	<1	18	<1
<35 mph	805	23	111	9	937	19
35-40 mph	1,156	33	160	13	1,368	28
45-50 mph	690	20	211	17	938	19
55+ mph	639	18	691	57	1,357	28
Unknown	208	6	40	3	263	5
Total*	3,507	100	1,219	100	4,881	100
*Total includes other and/or unknowns						
<b>Table 4</b>						

Source: Insurance Institute for Highway Safety

### Discouragement of Walkability

The Pedestrian and Bicycle Information Center (PBIC), an affiliate of the University of North Carolina Highway Safety Research Center, is the national clearinghouse for information on health and safety, engineering, advocacy, education, enforcement, access, and mobility for pedestrians and bicyclists. PBIC research has categorized the reasons people are disinclined to walk along roadways (PBIC)<sup>13</sup>:

- Lack of sidewalks or sidewalks are blocked or in poor condition
- Perception or fact of motorists driving too fast or expectation of motorists not yielding to pedestrians; Crossing the street is or feels dangerous
- Lack of interesting/important destinations within walking distance
- The community simply does not feel that it is an inviting place to walk
- Children are discouraged or prohibited from walking because parents feels it is too dangerous

With little difficulty, many residents are able to relate this list disablement factors to the reasons they may be discouraged from walking along 100B and other roadways in Moretown.



### Discouragement of Cycling

The PBIC has also explored community bikeability factors (PBIC)<sup>14</sup>. Communities may not be bicycle-friendly if they have:

- Blind curves
- Heavy and/or fast moving traffic
- Drivers not sharing the road
- No easily accessible biking trails off road
- Uneven road surfaces
- No bike lanes
- Unclean air

The PBIC encourages communities to explore the questions related to this issue as well as to determine the extent of the problem and develop solutions.

### Environmental Health Issues

Vermont is noted for its scenic roadways meandering through lush landscapes and quaint hamlet towns. Resortandlodges.com, a respected on-line vacation-finder resource, rates Vermont as their #2 choice in their top ten destinations citing “breathtaking landscapes” as one feature(resortandlodges.com)<sup>15</sup>. Moretown is an attractive hamlet rich in beauty and natural resources that generates significant tourism for its size (2001 National Survey of the Vermont Visitor)<sup>16</sup>. Central Vermont, where Moretown is located, ranks as the 7<sup>th</sup> most popular tourist destination following the Lake Champlain Valley, the eastern gateway, southern Vermont and the Stowe area. However, Moretown is not a tourist destination per se, for it offers minimal

resources to entice tourists to stop or stay. A gas station/grocerette, two churches, town hall, library and historic society, elementary school and under fifty homes create the village center. North and south of Moretown village, sweeping landscapes and other attractions – such as ski slopes and larger towns hosting boutique-style commerce, uncommon eateries and unique accommodations – cause travelers to drive through Moretown toward their destinations of choice. They drive through, but rarely stop. Thus, as a drive-by community, residents of Moretown, particularly those who live in close proximity to Route 100B, are exposed to increased levels of traffic pollutants including carbon monoxide, hydrocarbons and particulate matter. Research demonstrates that these pollutants harm people (Environmental Protection Agency).<sup>17</sup> As Moretown plans for Scenic Byway infrastructure improvements, it is important to understand and to control vehicular traffic impacts on air quality and environmental pollutants. In his review of studies describing measurements and effects of air pollutants for those who reside near highways, Brugge, et.al., (2007)<sup>18</sup> found that approximately 11% of U.S. households are located within 100 meters of 4-lane highways. While Route 100B is not a four-lane highway, a greater proportion of the town's population lives within close proximity to the highway than lives in outlying areas. Moretown's land use is defined as "typical linear site development along the road taking the form of single lots in the open landscape, each with individual access points or curb cuts (Landworks, 2006)."<sup>19</sup> Figure 1 provided by Google Maps™, shows the distribution of households clustered in traditional design along Route 100B in Moretown, VT.

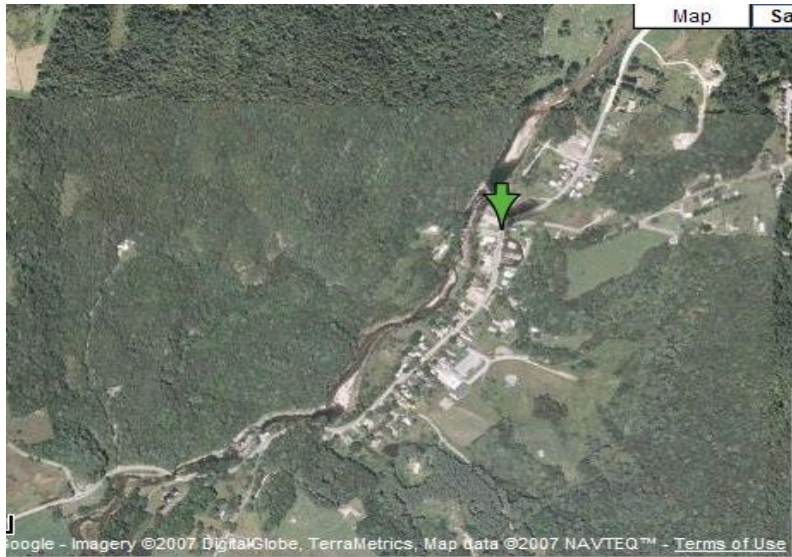


Figure 1

Evidence suggests that high levels of certain pollutants, resulting from vehicular exhaust, exist next to heavily traveled roadways and that “living within these elevated pollution zones can have detrimental effects on human health (Brugge, et.al., 2007).”<sup>20</sup> Pollutants in vehicular exhaust include carbon monoxide, nitrogen and sulfur oxides, unburned hydrocarbons, carbon dioxide, particulate matter, polycyclic aromatic hydrocarbons, and other organic compounds resulting from combustion (EPA, 1994).<sup>21</sup> In addition to the impact these pollutants have on the health of the environment, the effects on the human population include irritation to eyes, damage to lungs and aggravation of respiratory problems. Some hydrocarbon emissions may also be potentially cancer causing. There is an issue of noise pollution as well. An increase in motor traffic, particularly from trucks and motorcycles, can have a detrimental effect on a community from a noise standpoint. According to the World Health Organization, “high noise levels interfere with speech and communication, cause sleep disturbance, decreased learning ability and scholastic performance, increase stress-related hormones, blood pressure changes...”<sup>22</sup> Increases

in vehicular noise levels not only detract from scenic beauty but they also have physiological effects on local residents, particularly those who live closest to the main road.

### **Considerations for Improving Health and Safety Through the Built Environment**

Extensive research has been done on the impact of the built environment on the health and safety of communities. Built environment is defined as an area having human-made buildings and structures or human-influenced features, as opposed to natural features of an area. To augment our understanding of how and why Byway designation may impact the community of Moretown, Vermont, it is important to learn from experts who have done this research and then apply those findings to our community. Important to note is that much of the writing on this topic has been done around urban and suburban communities. However, the vast majority can be applied to rural communities as well. For example, an increase in vehicular traffic, whether in an urban or rural community, means more cars, increase in crash risk, and higher levels of air pollution. The addition of signage to calm traffic, no matter what the size of the community, is an important safety measure. Writings on the built environment often describe the detriments to communities in that excessive buildings, structure and concrete detract from the natural feature of an area and exacerbate community problems (R. Jackson, 2003)<sup>23</sup>. But that doesn't have to be the case. In Moretown we can consider sustainable growth as a compliment to byway designation and really make something good in our town. For example, making improvements to increase pedestrian safety such as signage and crosswalks, or building a centrally located park area with a band shell or gazebo that encourages locals to congregate and recreate can help to build a sense of community and impact health in a positive way.

According to the World Health Organization (WHO) good health is not merely the absence of disease; it is also a reflection of the social and mental well-being of people in a community. The central theme of this definition is that good health is not only about not being sick, it is about being well. Being in good health is not just about the individual, but it is also about the social environment and good health includes not just members of a community, but the community itself. In thinking about the social aspect of this definition, we might ask how well our community provides for its residents in terms of access to health care, social supports, safety on the roads, and so forth. Adding to this definition, improvements in a community should aim not simply to reduce disease, but also to reduce social tensions and mental ill-health to acceptable levels (Howard, 2002).<sup>24</sup> If Moretown were to consider these as tenets of our community planning efforts, we position ourselves to address both community health and well-being, and the economic/tourism benefits of Byway designation. Thus we work toward achieving a more multi-faceted improvement program that has a greater reach and utilization./participation.

### Traffic Calming

Retting, et.al., (2003 American Journal of Public Health )<sup>25</sup> discuss three categories to consider for traffic calming that are designed to increase the safety of pedestrians and reduce the risk of pedestrian-vehicle crashes:

- separation of pedestrians from vehicles by time or space
- measures that increase the visibility and conspicuity of pedestrians
- reductions in vehicle speeds

Separation of pedestrians from vehicles by space can be accomplished with sidewalks that stretch the length of the village proper and extend beyond the village to popular walking destinations such as river access points and local walking trails. Separation of pedestrians from vehicles by time is harder to accomplish, but it is important to recognize the busy road traffic times each day and season by season. Improvements in pedestrian visibility can be accomplished in numerous ways. First, educational campaigns can include a component that addresses important clothing safety tips, such as wearing light clothing and reflective gear. Second, infrastructure changes, such as removing greenery that blocks visibility and painted crosswalks along with signs and safety cones at intersections and crosswalks, can draw attention to the movement of pedestrians. Reducing vehicle speeds is another key way to calm traffic through our town and village center. For example, currently the speed limit across most of 100B is 50 mph, which decreases to 40 mph upon entering the village outskirts, reduces to 35 mph for a short distance and further reduces to 30 mph in the village proper. A five mile per hour decrease across the entire length of 100B would slow traffic and discourage the sense of this road as a “highway.” Further reducing the speed limit to 25 mph in the village proper would likely have a positive effect on the feeling of safety felt by pedestrians and cyclists. Simply reducing the speed does not, however, guarantee general obedience to the limit. To assure compliance, additional enforcement mechanisms must also be put in place.

### *Walking and Cycling*

The factors listed by the PBIC that discourage walking and cycling in communities need to be carefully considered as they relate to Moretown.

To help towns improve the walkability and bikeability of community roads, the Pedestrian and Bicycle Information Center has created walkability and bikeability checklists (Appendix A and Appendix B) to help assess the current walk/bikeability of a community. These checklists examine room for walking/cycling, ease of crossing streets, safety, pleasantness of walk/bike ride and the behavior of drivers. Gauge the perception of walkability/bikeability based on resident feedback from these surveys provides Moretown leaders with necessary information to justify recommended changes.

Once we determine the issues we would like to address to improve walkability and/or bikeability, we can turn to state and national programs for assistance. One such program is called Safe Routes to Schools<sup>26</sup>. A program of the U.S. Department of Transportation's Federal Highway Administration, Safe Routes to Schools (SRTS) provides funds to states for community improvement efforts that improve the ability of students to walk and bike to schools safely. The program establishes two types of funding, infrastructure projects for engineering improvements like sidewalks and non-infrastructure projects like education and enforcement initiatives. Improving conditions for walking and bicycling within the vicinity of schools can serve as a major improvement in a small town for encouraging greater levels of physical activity. For example, SRTS can help our town rebuild extend our sidewalks, install street lighting, increase the number of bicycle racks, and build walking and biking paths. There is also an education component to SRTS that helps communities plan education strategies such as who needs to receive information (the audience), when educational opportunities should be delivered, what information needs to be conveyed and how it will be shared. This and more detailed information can be found on the SRTS website at [www.saferoutesinfo.org](http://www.saferoutesinfo.org).

## Signage to Improve Vehicular and Pedestrian Safety

Signs are a crucial element in improving pedestrian safety. Signs help both pedestrians as well as motorists to recognize areas designated for crossing. Figure 2 shows examples of two signs designed to protect pedestrians:



Figure 2

Vermont state law specifies that motorists must yield to pedestrians in crosswalks (23 V.S.A.; 13; § 1051 Pedestrians' right of way in crosswalks)<sup>27</sup> Signs such as these are available for purchase by the State of Vermont. Currently no such signage exists in Moretown possibly because to date Moretown has not designated a specific crosswalk area within the village or the edges of town. Both of these represent a missed opportunity by the town of Moretown to improve pedestrian safety and well-being. Positioning a crosswalk adjacent to the post office and at the school as a starting point provides pedestrians safer sections to cross the road. Additional crosswalks further along the edges of town, if sidewalks were also to be extended, might also be considered. These enhancements would improve pedestrian mobility and safety and would send a message to motorists and pedestrians alike that Moretown is a pedestrian-friendly town.



## **Education for Public Engagement and Community Health Improvement**

### **Understanding the Social-Ecological Framework**

People need to understand what makes them sick and what keeps them healthy. If people do not understand the causes of ill-health and how they can improve their health, they are not inclined or ready to begin investing resources and time to improve the well-being of their community. The awareness of individuals about personal health is fundamental to promoting a healthier community. It is also essential that community members are aware that improvements in their environment need to be sustained to achieve long-term improvements in their own health (Howard, 2002).<sup>28</sup>

The Social-Ecological Framework of health promotion is a public health model that describes a framework for understanding health behavior. Central to this Framework are four main levels (figure 2): Individual, Organizational, Community and Population. Each of these levels plays an important role in sustainable health behavior change.

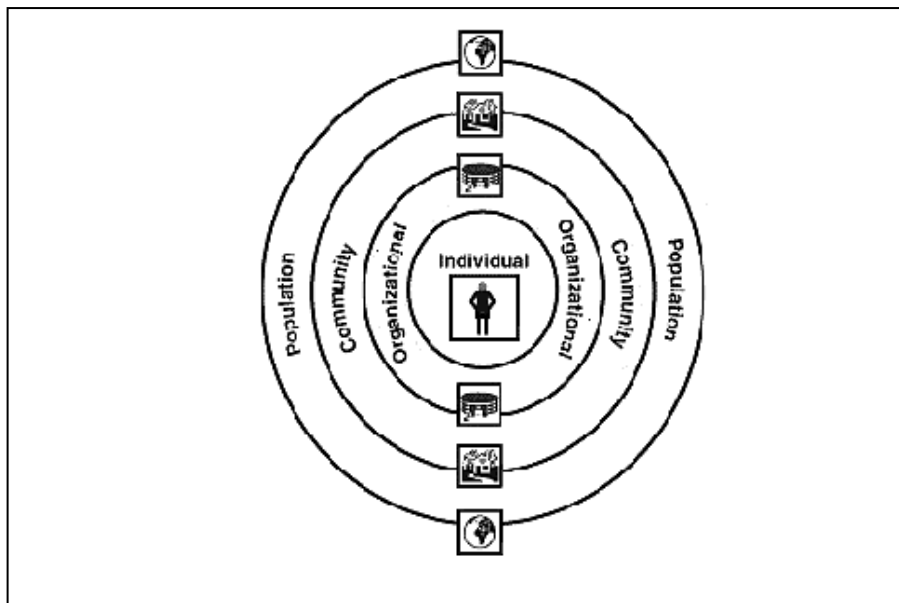


Figure 2: Social Ecological Framework for health promotion

The individual level focuses on understanding the determinants of individual health behaviors. This level focuses on individual psychological and cognitive factors such as knowledge, attitudes, beliefs and personality traits. What influences individuals and how those influences impact behavior change can be measured through individual change theory models such as the Health Belief Model or the Transtheoretical Model, known more commonly as the Stages of Change. This model can serve as a framework for developing interventions that target individuals. Developed by James Prochaska, Ph.D., and his colleague Carlo DiClemente, Ph.D.<sup>29</sup>, the Stages of Change model theorizes that behavior change occurs over time and in six distinct stages which correspond to a person's readiness for change. People move from one stage to another though the movement is not necessarily linear. The stages include:

- Pre-contemplation: a person who has not yet contemplated change, or who is aware of change and its benefits but thinks it doesn't apply to him or her.
- Contemplation: A person in this stage is aware of the pros and cons of behavior change but is not yet ready to make change possibly because the cons still outweigh the pros.
- Preparation: In this stage a person is getting ready to take action soon. A person in this state has a plan and may still be gathering information to support that plan.
- Action: This is where a person tries the new behavior.
- Maintenance: This stage represents the movement that people generally take in fluxuation between the stages. Rarely does a person move from one stage to another, reaching action stage and then stays there, fully successful. Behavior change often requires several attempts with lapses back to prior behavior.
- Termination: For some the maintenance stage lasts forever (for example the recovering alcoholic is perpetually in maintenance stage). However, for others, full and absolute

confidence in the new behavior can take hold and become complete so as to not even enter the mind as a temptation.

These stages of change, illustrated in Appendix C, are key to understanding how change is influenced at the individual level, which is a necessary first hurdle in addressing a community health endeavor.

At the organizational level of the Social-Ecological Framework, we focus on social institutions. The goal is to change organization culture, structure and mission to endorse and facilitate healthy behaviors. The organizational level is important because people spend much time engaging with organizations. This is the level at which large groups are potentially reached with public health programs. In addition to access to groups of people for public health messages, programs and initiatives, organizations can also provide a setting with role models and support systems. Our rural community of Moretown does not house what is traditionally considered as “organizations” – businesses and other places of work which staff large numbers of people, with the exception, perhaps, of the Moretown school – however, there are informal organizations that emerge in the form of local government, coalitions, task forces and the like. It is likely, though, that this level may not be the focus of a local educational intervention.

At the community level we focus on how people in communities organize themselves to solve problems. The dimensions of community include: locality, relational, and collective political power. Community assessments at this level assess the health of a community, arrive at a priority problem and develop a plan. Community intervention models include: coalition building, community organizing. The goal here is to change community to promote health and improve community competence. Evaluation efforts would focus on whether the community is able to come together to name and solve problems.

At the population level, we address governance. The population perspective addresses socio-political factors that impact health. It focuses on public policy as a health promotion strategy (local, state and national). Such policy might include economic and social policies that address disproportionate socioeconomic statuses between people and social and cultural norms such as those around dominance of vehicle usage over non-motorized modes of travel, laissez faire norms around environmental hazards such as vehicular air pollution and cultural norms that endorse individual rights over community responsibility.

### **Developing an Educational Strategy**

According to Dr. Jane Vella and colleagues in Global Learning Partners – developers of Dialogue Education and based on adult learning theory – there is a specific approach to education design and delivery.<sup>30</sup> This design begins with an analysis of the educational design structure which includes the rationale, timeframe, location, content to be delivered achievement-based objectives and teaching methods. A learning and needs assessment should be conducted prior to the learning opportunity so that it may inform the workshop design and content. Any learning opportunity involving adult learners should respect learners as the subjects of their own learning, ensure immediacy of learning for all participants, use teamwork and other interactive strategies to promote interaction, discussion and dialogue. Applying these practices ensures that learners are engaged in the learning, and have opportunities to hold themselves and each other accountable for the learning experience. Using this model, the following analysis sets the stage for the local learning opportunity based upon the findings in this paper.

For whom is this education intended? - Moretown Select board members, members of the 100B Mad River Byway Committee, the Washington County Regional Planning Commission and the Moretown School Board

Why? Rationale for the this audience and learning opportunity - Members of the Select board and members of the 100B Mad River byway committee are dedicated individuals with an interest in the enhancement of Moretown as a tourist destination and as a sustainable community. For this reason alone, this group of individuals is potentially ripe and ready for learning about the health impacts facing our town as a result of byway designation as well as improvement strategies that can enhance the health and well-being of individual residents as well as the community as a whole. As our town was developing the rationale for seeking byway designation, much thought went into improvements to roads, recreational endeavors and natural resources. However, particular attention to the health and safety of Moretown residents was not emphasized and this represents a unique opportunity to do so now. Town officials are more likely to implement strategies that they understand has a positive impact on the community and that they are confident speaking about. Town officials want current information, effective strategies, and opportunities to network and share resources/experiences.

When and where should this educational opportunity take place? -Moretown has a town hall that is available for use by the community at little to no cost. This is an ideal location for this educational experience as it is centrally located and within the village center. The learning opportunity should take place over two evenings, set one week apart. This will allow for reflection and absorption of material, time for additional research based upon identified strategies, and an opportunity to reinforce learning.

Achievement-based objectives - By the end of learning opportunity, participants will have:

- Discovered new information about the health and safety impact of increased road traffic and tourism in our community
- Identified relationships between traffic patterns and pedestrian safety issues
- Evaluated at least one relevant resource for collecting resident perspectives on issues related to the health and safety of the community
- Generated strategies for traffic calming across the byway
- Constructed specific strategies that engage other learners and the community at large in the town-wide improvement process
- Developed an implementation plan with timeline and milestones designed to assure action and implementation

## **Summary and information sheet for community engagement**

The National Scenic Byways program was established to help “recognize, preserve and enhance roads throughout the United States” through four primary approaches: promotion through increased tourist visits, preservation of historic and natural resources, partnerships forged among stakeholders, and pride through conservation, improvement and development efforts. Many of these benefits have already been realized by the designation of federal byway status for 100B which runs through Moretown, Vermont. Additionally health and safety considerations of individuals and the community must be addressed for a fuller more comprehensive and sustainable development effort within Moretown.

### *Health Considerations from increased traffic flow*

- Moretown’s land use is defined as “typical linear site development along the road”
- As a drive-by community, residents of Moretown are exposed to increased levels of traffic pollutants including carbon monoxide, hydrocarbons and particulate matter
- Living within elevated pollution zones can have detrimental effects on human health
  - Pollutants in vehicular exhaust include carbon monoxide, nitrogen and sulfur oxides, unburned hydrocarbons, carbon dioxide, particulate matter, polycyclic aromatic hydrocarbons, and other organic compounds resulting from combustion
  - Some hydrocarbon emissions may be potentially cancer causing.
- There is an issue of noise pollution as well. Increases in vehicular noise levels not only detract from scenic beauty but also have physiological effects on local residents, particularly those who live closest to the main road
  - High noise levels interfere with speech and communication, cause sleep disturbance, decreased learning ability and scholastic performance, increase stress-related hormones, blood pressure changes.

### *Safety Considerations from increased traffic flow*

- More than half of all pedestrian deaths occurred on major, non-interstate roads
- Thirty percent of pedestrian deaths occur on roads with speed limits between 35-50 M.P.H.
- Pedestrian-vehicle crashes in rural areas are more likely to occur along major roads
- People are disinclined to walk along roadways due to:
  - Lack of sidewalks or sidewalks are blocked or in poor condition
  - Perception or fact of motorists driving too fast or expectation of motorists not yielding to pedestrians; crossing the street is or feels dangerous
  - Lack of interesting/important destinations within walking distance
  - The community simply does not feel that it is an inviting place to walk
- People are disinclined to bike along roadways due to:
  - Blind curves
  - Heavy and/or fast moving traffic; drivers not sharing the road
  - No easily accessible biking trails off road
  - Uneven road surfaces
  - No bike lanes
  - Unclean air

### *Specific actions Moretown can take:*

- Signage
  - Signs help both pedestrians and motorists recognize areas designated for crossing
  - Vermont state law specifies that motorists must yield to pedestrians in crosswalks
  - Crosswalk signs are available for purchase by the State of Vermont
- Community Assessments
  - Pedestrian and Bicycle Information Center walkability and bikeability checklists to help assess the current walk/bikeability of a community. If Moretown utilized these checklists the town would be able to gauge the perception of



walkability/bikeability based on resident feedback from these surveys, which would provide improved understanding of what changes need to occur to encourage more walking and cycling within and through town. (See Appendices A & B)

- Checklists examine:
  - room for walking/cycling
  - ease of crossing streets
  - safety
  - pleasantness of walk/bike ride
  - behavior of drivers
- Safe Routes to Schools (SRTS) provides funds to states for community improvement efforts that improve the ability of students to walk and bike to schools safely.
  - Two types of funding:
    - infrastructure projects for engineering improvements like sidewalks
    - non-infrastructure projects like education and enforcement initiatives
  - SRTS can help our town:
    - rebuild and extend our sidewalks
    - install street lighting
    - increase the number of bicycle racks
    - build walking and biking paths
  - SRTS education component helps communities plan education strategies:
    - who needs to receive information (the audience)
    - when educational opportunities should be delivered
    - what information needs to be conveyed
    - how it will be shared

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<http://www.bywaysonline.org/nominations/benefits.html>
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- <sup>29</sup> *Changing for Good*, Prochaska, James, O; Norcross, John, C.; DiClemente, Carlo.C.; 1995; Avon Books, New York
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Take a walk and use this checklist to rate your neighborhood's walkability.

# How walkable is your community?

Location of walk \_\_\_\_\_

Rating Scale:



## 1. Did you have room to walk?

- ☐ Yes ☐ Some problems:
- ☐ Sidewalks or paths started and stopped
  - ☐ Sidewalks were broken or cracked
  - ☐ Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
  - ☐ No sidewalks, paths, or shoulders
  - ☐ Too much traffic
  - ☐ Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one)

1 2 3 4 5 6

## 2. Was it easy to cross streets?

- ☐ Yes ☐ Some problems:
- ☐ Road was too wide
  - ☐ Traffic signals made us wait too long or did not give us enough time to cross
  - ☐ Needed striped crosswalks or traffic signals
  - ☐ Parked cars blocked our view of traffic
  - ☐ Trees or plants blocked our view of traffic
  - ☐ Needed curb ramps or ramps needed repair
  - ☐ Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one)

1 2 3 4 5 6

## 3. Did drivers behave well?

- ☐ Yes ☐ Some problems: Drivers...
- ☐ Backed out of driveways without looking
  - ☐ Did not yield to people crossing the street
  - ☐ Turned into people crossing the street
  - ☐ Drove too fast
  - ☐ Sped up to make it through traffic lights or drove through traffic lights?
  - ☐ Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one)

1 2 3 4 5 6

## 4. Was it easy to follow safety rules?

Could you and your child...

- ☐ Yes ☐ No
- Cross at crosswalks or where you could see and be seen by drivers?
  - Stop and look left, right and then left again before crossing streets?
  - Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
  - Cross with the light?
- Locations of problems: \_\_\_\_\_

Rating: (circle one)

1 2 3 4 5 6

## 5. Was your walk pleasant?

- ☐ Yes ☐ Some unpleasant things:
- ☐ Needed more grass, flowers, or trees
  - ☐ Scary dogs
  - ☐ Scary people
  - ☐ Not well lighted
  - ☐ Dirty, lots of litter or trash
  - ☐ Dirty air due to automobile exhaust
  - ☐ Something else \_\_\_\_\_
- Locations of problems: \_\_\_\_\_

Rating: (circle one)

1 2 3 4 5 6

## How does your neighborhood stack up?

Add up your ratings and decide.

- |             |       |   |
|-------------|-------|---|
| 1. _____    | 26-30 | Celebrate! You have a great neighborhood for walking. |
| 2. _____    |       |   |
| 3. _____    | 21-25 | Celebrate a little. Your neighborhood is pretty good. |
| 4. _____    | 16-20 | Okay, but it needs work.                              |
| 5. _____    | 11-15 | It needs lots of work. You deserve better than that.  |
| Total _____ | 5-10  | It's a disaster for walking!                          |

Now that you've identified the problems,  
go to the next page to find out how to fix them.

Pedestrian and Bicycle Information Center (PBIC); University of North Carolina Highway Safety Research Center;  
U.S. Department of Transportation <http://www.walkinginfo.org/>

Go for a ride and use this checklist  
to rate your neighborhood's bikeability.

# How bikeable is your community?



Location of bike ride (be specific):

Rating Scale:



## 1. Did you have a place to bicycle safely?

a) On the road, sharing the road with motor vehicles?

- ☐ Yes ☐ Some problems (please note location):
- ☐ No space for bicyclists to ride
  - ☐ Bicycle lane or paved shoulder disappeared
  - ☐ Heavy and/or fast-moving traffic
  - ☐ Too many trucks or buses
  - ☐ No space for bicyclists on bridges or in tunnels
  - ☐ Poorly lighted roadways
- Other problems: \_\_\_\_\_

b) On an off-road path or trail, where motor vehicles were not allowed?

- ☐ Yes ☐ Some problems:
- ☐ Path ended abruptly
  - ☐ Path didn't go where I wanted to go
  - ☐ Path intersected with roads that were difficult to cross
  - ☐ Path was crowded
  - ☐ Path was unsafe because of sharp turns or dangerous downhill
  - ☐ Path was uncomfortable because of too many hills
  - ☐ Path was poorly lighted
- Other problems: \_\_\_\_\_

Overall "Safe Place To Ride" Rating: (circle one)

1 2 3 4 5 6

## 2. How was the surface that you rode on?

- ☐ Good ☐ Some problems, the road or path had:
- ☐ Potholes
  - ☐ Cracked or broken pavement
  - ☐ Debris (e.g. broken glass, sand, gravel, etc.)
  - ☐ Dangerous drain grates, utility covers, or metal plates
  - ☐ Uneven surface or gaps
  - ☐ Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)
  - ☐ Bumpy or angled railroad tracks
  - ☐ Rumble strips
- Other problems: \_\_\_\_\_

Overall Surface Rating: (circle one)

1 2 3 4 5 6

## 3. How were the intersections you rode through?

- ☐ Good ☐ Some problems:
- ☐ Had to wait too long to cross intersection
  - ☐ Couldn't see crossing traffic
  - ☐ Signal didn't give me enough time to cross the road
  - ☐ Signal didn't change for a bicycle
  - ☐ Unsure where or how to ride through intersection
- Other problems: \_\_\_\_\_

Overall Intersection Rating: (circle one)

1 2 3 4 5 6

**Continue the checklist on the next page...**



#### 4. Did drivers behave well?

- ☐ Yes    ☐ Some problems, drivers:
- ☐ Drove too fast
  - ☐ Passed me too close
  - ☐ Did not signal
  - ☐ Harassed me
  - ☐ Cut me off
  - ☐ Ran red lights or stop sign
- Other problems: \_\_\_\_\_

Overall Driver Rating: (circle one)

1   2   3   4   5   6

#### 5. Was it easy for you to use your bike?

- ☐ Yes    ☐ Some problems:
- ☐ No maps, signs, or road markings to help me find my way
  - ☐ No safe or secure place to leave my bicycle at my destination
  - ☐ No way to take my bicycle with me on the bus or train
  - ☐ Scary dogs
  - ☐ Hard to find a direct route I liked
  - ☐ Route was too hilly
- Other problems: \_\_\_\_\_

Overall Ease of Use Rating: (circle one)

1   2   3   4   5   6

#### 6. What did you do to make your ride safer?

Your behavior contributes to the bikeability of your community. Check all that apply:

- ☐ Wore a bicycle helmet
- ☐ Obeyed traffic signal and signs
- ☐ Rode in a straight line (didn't weave)
- ☐ Signaled my turns
- ☐ Rode with (not against) traffic
- ☐ Used lights, if riding at night
- ☐ Wore reflective and/or retroreflective materials and bright clothing
- ☐ Was courteous to other travelers (motorist, skaters, pedestrians, etc.)

#### 7. Tell us a little about yourself.

In good weather months, about how many days a month do you ride your bike?

- ☐ Never
- ☐ Occasionally (one or two)
- ☐ Frequently (5-10)
- ☐ Most (more than 15)
- ☐ Every day

Which of these phrases best describes you?

- ☐ An advanced, confident rider who is comfortable riding in most traffic situations
- ☐ An intermediate rider who is not really comfortable riding in most traffic situations
- ☐ A beginner rider who prefers to stick to the bike path or trail

#### How does your community rate?

##### Add up your ratings and decide.

(Questions 6 and 7 do not contribute to your community's score)

- |             |       |  |
|-------------|-------|--|
| 1. _____    | 26-30 | Celebrate! You live in a bicycle-friendly community.   |
| 2. _____    | 21-25 | Your community is pretty good, but there's always room for improvement.                            |
| 3. _____    | 16-20 | Conditions for riding are okay, but not ideal. Plenty of opportunity for improvements.             |
| 4. _____    | 11-15 | Conditions are poor and you deserve better than this! Call the mayor and the newspaper right away. |
| 5. _____    | 5-10  | Oh dear. Consider wearing body armor and Christmas tree lights before venturing out again.         |
| Total _____ |       |  |

#### Did you find something that needs to be changed?

On the next page, you'll find suggestions for improving the bikeability of your community based on the problems you identified. Take a look at both the short- and long-term solutions and commit to seeing at least one of each through to the end. If you don't, then who will?

During your bike ride, how did you feel physically? Could you go as far or as fast as you wanted to? Were you short of breath, tired, or were your muscles sore? The next page also has some suggestions to improve the enjoyment of your ride.

Bicycling, whether for transportation or recreation, is a great way to get 30 minutes of physical activity into your day. Riding, just like any other activity, should be something you enjoy doing. The more you enjoy it, the more likely you'll stick with it. Choose routes that match your skill level and physical activities. If a route is too long or hilly, find a new one. Start slowly and work up to your potential.

### Prochaska and DiClemente's Stages of Change Model

Stage of Change	Characteristics	Techniques
Pre-contemplation	Not currently considering change: "Ignorance is bliss"	Validate lack of readiness Clarify: decision is theirs Encourage re-evaluation of current behavior Encourage self-exploration, not action Explain and personalize the risk
Contemplation	Ambivalent about change: "Sitting on the fence" Not considering change within the next month	Validate lack of readiness Clarify: decision is theirs Encourage evaluation of pros and cons of behavior change Identify and promote new, positive outcome expectations
Preparation	Some experience with change and are trying to change: "Testing the waters" Planning to act within 1 month	Identify and assist in problem solving re: obstacles Help patient identify social support Verify that patient has underlying skills for behavior change Encourage small initial steps
Action	Practicing new behavior for 3-6 months	Focus on restructuring cues and social support Bolster self-efficacy for dealing with obstacles Combat feelings of loss and reiterate long-term benefits
Maintenance	Continued commitment to sustaining new behavior Post-6 months to 5 years	Plan for follow-up support Reinforce internal rewards Discuss coping with relapse
Relapse	Resumption of old behaviors: "Fall from grace"	Evaluate trigger for relapse Reassess motivation and barriers Plan stronger coping strategies

Source: UCLA Center for Human Nutrition